



**MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION PROGRAM**

2008 and 2009 Biennial Report



The cover photo is Continental Coal's Panther Creek Mine. It is a reclaimed surface coal mine located in Bates County.

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Missouri Department of Natural Resources

Mike Larsen, Director
Land Reclamation Commission

Introduction

Mining activity in Missouri began as early as the 1740s, for mineral commodities such as lead, iron, limestone, sand and gravel. Coal mining, however, began in Missouri in the 1840s. With no legislation or regulation of these operations, there were as many as 67,000 acres left unreclaimed by coal-mining operations. An estimated 40,000 acres were left abandoned from the mining of other commodities. Missouri was left with a legacy of acid-mine drainage, dangerous highwalls, toxic mine spoils, dangerous mine shaft openings, unvegetated and barren soils, soil erosion and stream sedimentation.

The Missouri Department of Natural Resources' Land Reclamation Program was established in 1974 to regulate present mining operations and to reduce or eliminate the issues caused by coal mining operations prior to laws regulating such operations were enacted. The Land Reclamation Program works to ensure today's mining industry remains in compliance with Missouri Law Chapter 444 (Rights and Duties of Miners and Mine Owners). The law includes several chapters that are enforced by separate units within the Land Reclamation Program. The Industrial Minerals and Metallic Minerals Unit is responsible for

Land Reclamation Commission

Public Members

Jim DiPardo, Chairman
St. James

Dr. Gregory Haddock,
Associate Professor of Geography
Northwest Missouri State University

Nick Matherly, Cabool

Col. John Riffle, Pleasant Hill

Statutory Members

John Hoskins, Director
Missouri Department of Conservation

Joe Gillman, State Geologist
Division of Geology and Land Survey Director
Missouri Department of Natural Resources

Earl Pabst, Acting Director
Clean Water Commission



Continental Coal's
Cottonwood Creek Mine -
Bates Co.

Midwest Coal's fully reclaimed
Tiger Mine - Bates County



Land Reclamation Mission:

To assure beneficial restoration of mined lands and to protect public health, safety and the environment from the adverse effects of mining within the state of Missouri.

sections Metallic Minerals Waste Management RsMo. Chapter 444.350-444.380 and the Land Reclamation Act RsMo. Chapter 444.760-444.790. The Projects and Inspection Unit and the Permits, Contracts and Design Unit are responsible for the Surface Coal Mining Law RsMo Chapter 444.800-444.970.

The state regulations further define these laws. Citizens can find these laws in their entirety in the Rules of Department of Natural Resources Division 40 - Land Reclamation Commission Chapters 1 through 10 for coal and industrial minerals. Metallic Minerals regulations are found at Rules of Department of Natural Resources Division 45 - Metallic Minerals Waste Management Chapters 1 through 8.

The ultimate responsibility of the program is to ensure mine sites in Missouri are returned to a suitable land use and the adverse effects from active mining operations are minimized. When properly reclaimed, these areas can once again be used as farm lands or wildlife areas. Wildlife habitat remains a primary concern of the Land Reclamation Program. Whenever possible, abandoned mines are reclaimed with wetlands, native prairie grasses and trees that are part of Missouri's history. Declining coal production in no way decreases the responsibilities of the Land Reclamation Program.

Monthly inspections of each mine continue to be performed long after the last ton of coal is removed. Revisions to permits and reclamation changes continue to be submitted for review and approval, as operators fine-tune their post-mining land use plans. Bond release requests increase in number and in size as more ground is reclaimed to acceptable standards. In effect, reclamation activities consume a far larger percentage of time and effort than the actual mining of coal itself.

This biennial report provides information and statistical summaries concerning the activities and business accomplishments of the Land Reclamation Program and its efforts to reclaim mined land during the fiscal years of 2008 and 2009.

For more information, contact the department's Land Reclamation Program at 800-361-4827

Land Reclamation Program and Administration

Organization

The Land Reclamation Program was originally established in the Omnibus State Reorganization Act of 1974. This act created the Department of Natural Resources and placed the Land Reclamation Commission (created by Missouri Statutes Chapter 444) under its auspices. The Land Reclamation Commission directs the staffing and operations of the program within the Missouri Department of Natural Resources' Division of Environmental Quality.

The seven-member commission includes three statutory members - the state geologist, the director of the Missouri Department of Conservation and the staff director of the Clean

Water Commission. The governor, with Senate approval, selects four public members. Of these four, only two may be of the same political party. Only one member of the commission may have a direct link with the mining industry.

The Land Reclamation Program consists of the administrative, abandoned mines lands, coal and non-coal units. A total of 24 full time staff members comprise the program and are divided between the four units. Together they are responsible for administration of the program, reclaiming abandoned mine lands and conducting inspections at all active mining operations in Missouri.



Associated Electric's BEE
VEER Mine, Randolph County.

2008 - 2009 Program Highlights

Coal

At the start of fiscal year 2008 Missouri had 10,844 acres permitted for both coal mining and coal bond forfeiture. By the end of fiscal year 2009 only 6,046 acres remained. The acreage and permits continue the trend to decrease as the demand for high sulfur coal in Missouri also decreases. The Land Reclamation Program released reclamation liability on five permits covering 1,343 acres at bond forfeiture sites and consequently 5 inspectable units were removed as well. Releases of reclamation liability on permanent program permits were approved on 3,455 acres covered by eight permits and four inspectable units.

Non-coal

The non-coal unit has two noteworthy accomplishments for fiscal years 2008 and 2009. The first accomplishment is getting all field staff equipped with laptop computers and producing maps and inspection reports in the field. Staff developed an inspection report checklist that turned out to be a huge timesaver. All of the non-coal inspectors use the checklist and laptops. In 2009 all 604 of the non-coal inspection reports were issued on an average of under two days; 1.79 days on average to be exact. Just for comparative purposes, in 2002 and 2004 it took seasoned inspectors more than 16 days to issue an inspection report. This also means the time saving technique allows the inspector to get back out in the field faster to conduct additional inspections. Again for comparative purposes in 2006, the non-coal unit conducted only 100 inspections for the entire year. Now the laptops work almost flawlessly out in the

field. Operators are impressed with the mapping and GPS technology to the point where we get comments such as "Wow, you guys are really professional!"

The other and most significant accomplishment involves the non-coal unit using the date of last inspection table to get all sites caught up by the end of 2009 so the last inspection date of a site will be in 2007. This goal was accomplished in November 2009. This is a huge improvement from previous years. At past Land Reclamation Commission meetings, before development of the date of last inspection table, public attendee's would announce to the commission a statement similar to "this site has not been inspected in the last 15 years". The commission will no longer encounter such allegations because of actions taken by staff. This table developed by Chris Thiltgen ties together the header, location and inspection tables to create a date of when an active site was last inspected. During all of 2009, non-coal staff worked through the list of approximately 400 mine sites to get all sites caught up to a date of last inspection being in 2007. The continued goal for the non-coal unit is to keep inspections up at sites so the last inspection date of any site will be two years or less.

Abandoned Mine Land Unit

Land Reclamation Program has made significant progress toward reclaiming Missouri's most severe abandoned coal mine problems. Since 1980, there have been 141 reclamation projects, totaling 4,231 acres have been completed. These formerly barren and acidic wastelands are being reclaimed to productive uses such as recreation, pasture, forage and wildlife habitat. Acid mine drainage is being mitigated returning streams and lakes to productive uses and restoring aquatic life. A total of 241 dangerous coal and non-coal mine openings have been closed, protecting Missouri citizens and property. Tables 7 and 8, located on pages 12 and 13, provide details as to the types and numbers of problems reclaimed. Despite these significant accomplishments, an additional 8,000 acres of abandoned coal mine lands and possibly hundreds of extremely dangerous non-coal mine openings remain to be reclaimed as grant funding becomes available. At the end of the reporting period, a construction contract was being awarded for the West Montrose Reclamation Project and engineering designs were being prepared for three additional reclamation projects covering approximately 190 acres.

Pasture Reclamation
at Associated Electric.



Coal Mining

Introduction and Purpose

Through growing national concern over the environmental degradation caused by coal mining, Public Law 95-87 was passed in 1977 by the U.S. Congress. This law, also known as the Surface Mining Control and Reclamation Act dictated specific requirements for the reclamation of coal mined land, and also established state regulatory authorities for the enforcement and monitoring of surface mine reclamation activities. The act also established programs and funding for reclaiming coal mine lands mined prior to May 2, 1977.

On May 3, 1978, the legislature amended Missouri's Strip Mine Law establishing Chapter 444.535 RSMo, commonly referred to as the Interim Program Law. Requirements of this law include:

- Topsoil must be removed and replaced to a minimum 6-inch depth.
- All prime farmland soils must be removed and replaced to 40-inch depth.
- All mined land must be reclaimed to an equal or better land-use capability.
- Mined land must be backfilled and graded to its approximate original contour.
- Coal waste and other acid-or toxic-forming material must be covered with a minimum of 4-feet of non-toxic material.
- A permanent vegetative cover compatible with the pre-mining land use must be established.

On May 17, 1982, the Missouri legislature passed the Surface Coal Mining Law (Chapters 444.800 - 444.970) to match federal standards established in the Surface Mining Control and Reclamation Act. The law made changes to the permitting process and granted the Land Reclamation Commission the authority to administer the abandoned mine land program. Coal companies were now required to submit baseline information on the hydrology,

geology, soils, fish and wildlife and cultural resources of the proposed mining area along with a detailed description of the proposed operation and reclamation plan. The most significant change to the reclamation requirements was prime farmland soils must be removed and replaced to a 48-inch depth. These requirements, known as the Permanent Program Law, continue in effect to the present day.

Over recent years, Missouri coal production has declined from 4.2 million tons in 1987 to approximately 452 thousand tons during 2009. This decline is largely due to industry demands for low-sulfur, western coal needed by power plants to reduce air pollution and to meet emission standards required by the federal Clean Air Act. Most of Missouri's coal reserves contain relatively high sulfur content, ranging from 2 to 7 percent by weight. However, Missouri coal has a relatively high British Thermal Unit, or BTU, compared to western coal. Some power plants have opted to mix Missouri's coal with lower BTU western coal to increase energy production without exceeding sulfur emissions.

Bond Forfeiture
Reclamation at Universal
Coal and Energy,
Howard County.



During the last two fiscal years, coal mining has been concentrated in an area in southwestern Missouri where, in places, coal seams contain lower levels of sulfur. During this time period, the Land Reclamation Program issued one coal mining permit, which transferred an existing mine of 651 acres. This active mine site is located in Bates County. At the end of fiscal year 2009, one company held two Missouri surface coal mine permits producing coal. The remaining permitted mines in Missouri were in various stages of reclaiming the land to regulatory standards.

Land Reclamation Program staff closely monitors coal mining operations, including both coal removal and reclamation activities. Monthly inspections of each mine are performed to ensure reclamation requirements are adhered to and continue until the reclamation liability release proving hydrologic balance of surface and groundwater, soil stability and vegetative production for a minimum of five years after final grading and seeding.

Permitting

Staff members are responsible for reviewing permit revisions and new permit applications. A summary of the permit actions for fiscal year 2008 and fiscal year 2009 are provided in Table 1. Land Reclamation Program staff are professionally trained in specific technical disciplines and are responsible for reviewing the technical mine plans with respect to their areas of expertise. Technical data that must be reviewed include engineering, blasting, soil science, geology, hydrology, revegetation, land use plans, fish and wildlife protection, cultural and historical resources and reclamation technology.

Staff members review all coal permit applications for adequacy and recommend approval or denial to the Land Reclamation Program staff director. Staff conduct regular evaluations of existing permits and also provide technical assistance to the mining industry and the public.

A thorough review of surface coal mining permit applications, permit revisions and other permit-related actions is necessary to ensure all requirements of the law and regulations are met. This includes determining all applications, as well as the review process itself, meet all legal and administrative requirements. The permitting requirements for coal mining are extensive, requiring careful evaluation of diverse and comprehensive environmental topics such as soil characteristics, surface and subsurface water quality controls, fish and wildlife information, cultural resources and land use planning. Reviews also focus on specific details such as engineering designs for sedimentation ponds and water diversions, blasting plans and hydrogeologic data to determine the probable hydrologic consequences of mining. Other permitting responsibilities include evaluating each applicant's legal compliance history with past mining activities and ensuring all public review requirements are fulfilled. Staff members also coordinate with other regulatory agencies to ensure the company proposing to conduct the mining activity has obtained other necessary environmental permits.

Bond Releases

Reclamation begins immediately after coal is removed from a strip mine pit. Regulations dictate a pit must be completely backfilled and graded no later than 180 days after coal removal. Topsoil must then be redistributed within an additional 270 days. The area must then be seeded during the first available growing season, with specific vegetation sufficiently established to control erosion by the end of the second year. Sediment ponds, diversions, explosive storage areas and maintenance pads also are subject to reclamation requirements after they become inactive or are no longer needed as part of the mining operation. Only when these requirements are met can an operator obtain a release of reclamation bonds.

In 2006 bonding requirements were changed for surface coal mines from a bond pool, with a flat bonding rate for all areas, to full cost bonding. Full cost bonding requires an engineering evaluation of the area to be mined determining the worst case scenario in terms of cost to reclaim should the company, for whatever reason, be unable to complete full reclamation. The bond amount is determined by the Land Reclamation Program and

Table 1

Surface Coal Mining Permit Actions for Fiscal Years 2008 and 2009		
	SFY08	SFY09
New surface mining permit applications received.	0	0
New surface mining permit applications approved.	0	0
New exploration permit applications approved.	0	0
Renewed exploration permit applications approved.	2	0
Permit amendments received (permit revisions, permit renewals, permit transfers.)	13	15
Permit amendments finalized (approved, withdrawn, denied)	13	15

is then posted by the company before a permit to mine coal is approved and issued. The bond is held in escrow by the Land Reclamation Program until such time as reclamation is completed and approved by the staff director of the program. Bonds are released in phases as regulated reclamation milestones are met.

The permanent program activity for this period resulted in Associated Electric Cooperative successfully achieving liability release of the remaining two permits of the NEMO Mine consisting of 56.3 acres. The company also received various liability releases for the Prairie Hill Mine encompassing nine different permits with 525.5 acres meeting Phase I requirements, 1,291.40 acres meeting Phase II requirements, and 3,381.59 acres meeting Phase III (final release) requirements.

In accordance with the legal consent agreement entered into with Continental Insurance and Beachner Construction an over bonded amount of \$144,000 was released after the sureties mobilized for reclamation. The release was to the sureties for a portion of a permit associated with Alternate Fuels Inc. Shortly after the surety's mobilization one of the landowners filed suit against Missouri for the reclamation plan that had been approved. Several months following the filing of the lawsuit AFI received a multi-million dollar court settlement from the State of Missouri for interfering in a business deal. The company filed bankruptcy to settle financial claims against the company. Since the company has the financial resources to perform the reclamation the sureties have suspended any further work until it is legally clear what reclamation plan will be followed and if the company will be required to complete the reclamation.

Inspections

Reclamation activities are closely monitored to ensure the required performance standards are met and the reclamation plans approved in the company's mining permits are followed. Coal mine inspections are performed monthly. On-site inspections serve three primary functions:

- Ensure an operation is functioning in a manner consistent with applicable state laws.
- Ensure an operation is fully complying with the conditions of the permit.
- Provide a public record on the status of mining and reclamation at a site.



Reclaimed coal mine in
Putnam County.

Two styles of inspections are done, termed a complete and partial. Complete inspections are required once per calendar quarter. They involve a complete review of an operator's compliance with all permit conditions and state statutes. As the name implies, partial inspections are a review of an operator's compliance with some of the permit conditions and state statutes.

Many aspects of a mining operation are evaluated during an inspection to ensure the following:

- Mining occurs within the confines of the permit.
- Topsoil is being salvaged and stockpiled.
- All stormwater runoff from mined areas enters sedimentation ponds.
- Pits and other areas of mine disturbance are promptly backfilled and graded.
- Topsoil is replaced to the required thickness.
- Vegetation is quickly reestablished in order to control erosion.

Monthly inspections continue after an operation ceases mining coal. Continued monitoring ensures reclamation continues in an expedient manner and all conditions of the reclamation plan are followed. Only when an operator gains approval for a Phase II release (vegetation sufficient to control erosion) does the inspection frequency decrease from monthly to quarterly.



Site inspection of Continental Coal - Hume Mine.

Enforcement

Notices of violation may be issued when an operator is out of compliance with the conditions of the permit or with state regulations. These are only issued after efforts to correct noncompliance through the process of conference, conciliation and persuasion prove ineffective. In general, if a notice of violation is issued, a monetary penalty will also be issued. Because inspections are conducted each month, it is rare a serious noncompliance would exist. Well trained inspectors are able to identify when a mining or reclamation process is getting off-track in time to rectify the situation with the company before the need to issue formal enforcement occurs.

Cessation orders are an elevated form of a notice of violation and are a more serious form of enforcement. The department will issue an order when a condition or practice at the mine site constitutes imminent danger to the health and safety of the public or imminent environmental harm to land, water or air resources. Orders may require the immediate cessation of mining until the problem is corrected. Cessation orders, because of their seriousness, require immediate abatement by the operator. Failure to do so may lead to a revocation of the mining permit. Cessation orders may also be issued for a failure to abate a notice of violation within the required time frame.

If cessation orders are not abated in a timely manner through the appropriate action on the part of the mining company, the next level of enforcement action is a show-cause order. This means the operator is ordered to show why their permit should not be revoked and the reclamation bond forfeited. Show-cause orders may also be issued for other reasons such as for patterns of violations and uncorrected delinquent reclamation.

The current practice of the Land Reclamation Program is to work closely with the active mining industry through monthly inspections and regular communication. This is done to identify any potential problems before they become serious enough to warrant the issuance of formal enforcement action. During the past two fiscal years this approach has proven itself to be so effective there has been no sound reason for the program to issue any type of formal enforcement. At the same time, mining and reclamation have proceeded with excellent results for both the industry and for the environment.

Bonding

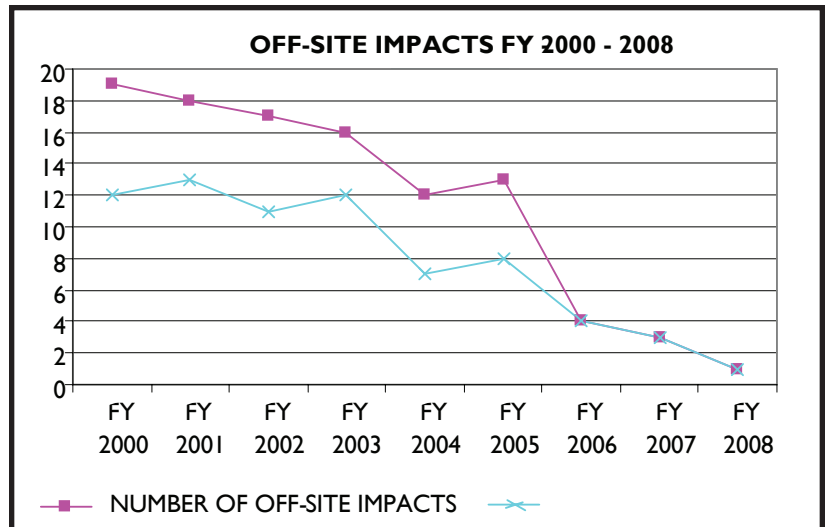
Missouri's Surface Coal Mining Law (Chapters 444.800 - 444.970) was amended in 2006 to address changes mandated by the federal Office of Surface Mining. A condition of Missouri's reacquisition of primacy was to change the bonding system in Missouri from one of a bond pool to one of full cost bonding. The necessary regulation changes were made prior to full return of primacy to the state on Feb. 1, 2006 through emergency rulemaking. These rules remained in effect until such time as the normal rulemaking process was completed.

The former bond pool approach relied on a set amount of money per acre being posted by the permit applicant prior to receiving a permit to engage in surface mining of coal and this set amount was supplemented by payments into a bond pool from all companies based upon yearly coal production. The present full cost bond approach requires the applicant to provide an estimate of the cost to reclaim a surface mine given the worst case scenario of the mining operation. That estimate is reviewed by program engineers and, when verified, that dollar amount is the amount of bonding required to be posted prior to the issuance of any surface mining permit for coal.

Bond Forfeiture Reclamation

Each permitted coal company in Missouri is required to provide financial assurance to ensure reclamation of the site after coal removal. Upon completion of reclamation to applicable standards, the coal company receives a release from the Land Reclamation Program. Should a coal company fail to provide reclamation to applicable standards the bonds are forfeited to the Land Reclamation Program and these bonds are used by the program to provide reclamation to the site mined by the coal company.

During this two year period wet weather conditions significantly hampered reclamation efforts on bond forfeiture sites. Even so, a great deal of reclamation was accomplished resulting in a Land Reclamation Commission release of 1,343.30 acres on five permits and also resulted in removing five inspectable units from the bond forfeiture sites inventory.



Off-Site Impacts

An off-site impact is defined as anything resulting from a surface coal mining and reclamation activity or operation that causes a negative effect on resources, such as people, land, water, structures, etc. The program must regulate or control the mining or reclamation activity or result of the activity causing an off-site impact. In addition, the impact on the resource must be substantiated as being related to a mining and reclamation activity and must be outside the area authorized by the permit for conducting mining and reclamation activities.

At the beginning of fiscal year 2008 there was only one off-site impact at a former mine site. The chart above illustrates the program's efforts over the past several years to eliminate these problem areas and reduce any impacts to land and water resources adjacent to former coal mining operations.

Off-site Impact.



Abandoned Mine Lands

Reclamation Funding

The abandoned mine land activities of Land Reclamation Program are funded by the U.S. Department of Interior's Office of Surface Mining Reclamation and Enforcement Abandoned Mine Land Reclamation fund. All of the money in the fund is collected from active coal mining companies through fees charged on the tonnage of coal mined since passage of Surface Mining Control and Reclamation Act. The Office of Surface Mining Reclamation and Enforcement distributes the fund to the eligible states and American Indian tribes. To date, Missouri has received \$72.7 million in abandoned mine land grants and cooperative agreements from the fund to conduct reclamation work in Missouri. Missouri has

an excellent record for obligating the funds received. Through state fiscal year 2009, ninety-eight percent of all grants received have been contractually obligated for the completion of reclamation projects.

Because of steadily declining coal production since the late 1980s, Missouri and other midwestern states have received decreasing allocations. In 1987, the U.S. Congress established an annual minimum base funding level in the amount of \$2 million to allow states with significant abandoned coal mine problems but limited coal production to continue their abandoned mine land programs. However, the \$2 million minimum base amount was consistently being reduced to \$1.5 million in the federal appropriations process. As part of the 2006 amendments, the minimum base funding to states was incrementally increased over five years to a maximum of \$3 million per year. And furthermore, these funds are administered as mandatory grant funds that no longer go through the federal appropriation process.

The U.S. Office of Surface Mining has ruled a state cannot operate an abandoned mine land program if it does not have a regulatory program to enforce reclamation laws upon active coal mines. Missouri lost its coal regulatory authority in 2003 because of state budget shortfalls. This authority was not returned to Missouri until February 2006, after state matching funds for the coal regulatory grant had been restored. During this period, Missouri permanently forfeited more than \$3.0 million of federal abandoned mine land funds.

In December 2006, the federal Surface Mining Reclamation and Control Act was amended to reauthorize abandoned mine land fee collections for an additional 15 years. Abandoned Mine Land reauthorization also allows for an increase in the minimum base funding level to \$3 million per year and names the State of Missouri as a recipient of abandoned mine land funding even if does not have a coal regulatory program.

AML Accomplishments

Problem	Reclaimed	Under Construction	Under Design	Total
AML Projects (#)	141	1	4	146
Mine Openings (#)	241	0	17	258
Highwall (ft.)	95,371	1,100	3,900	100,371
Hazardous Facilities	33	0	0	33
Subsidence (ac.)	7	0	0	7
Surface Burning	19	0	0	19
Underground Mine Fire (ac.)	7	0	0	7
Unsanitary Trash Dumps (ac.)	76	0	0	76
Dangerous Piles/ Embankments (ac.)	668	36	110	814
Clogged Streams (mi.)	10.8	0	0	10.8
Clogged Stream Lands (ac.)	1,603	5	0	1,608
Polluted Waters: Human Consumption, Agricultural or Industrial (#)	54	3	1	58
Hazardous Impoundments (#)	17	1	2	20
Polluted Impoundments (#)	96	0	0	96
Haul Road (ac.)	1	0	0	1
Spoil (ac.)	1,539	24	48	1,611
Gob (ac.)	148	0	0	148
Slurry (ac.)	69	0	0	69
Total AML Acreage	4,232	65	159	4,456

Reauthorization

The Abandoned Mine Land reauthorization was signed into law by president George W. Bush on Dec. 20, 2006. Following a three and one-half year legislative debate in congress over abandoned mine land reauthorization, the comprehensive legislation was passed as part of the Tax Relief and Health Care Act of 2006. This new bill represents the culmination of years of work by the states, tribes, federal government and other supporters to address the future of the abandoned mine land program. These new changes in federal law have resulted in substantial increases in abandoned mine land funding to states and tribes and allowed the program to focus abandoned mine land reclamation on projects that benefit public health and safety.

The reauthorization, which amended the 1977 Surface Mining Control Act, is a significant windfall that will provide many benefits to the Missouri Abandoned Mine Land program. It extends federal abandoned mine land fee collection authority and funding of the abandoned mine land program until the year 2021. The new changes will double the amount of funds Missouri and the other minimum-base states receive for completing reclamation projects that benefit public health and safety. In addition, the State of Missouri is designated as a recipient of abandoned mine land funds, even if it cannot continue to operate the coal regulatory program.

Other notable changes made by the 2006 amendments include:

- Abandoned mine land fees reduced by 20 percent over the duration of the extension.
- Previously Unappropriated State Share balances will be paid out to states and tribes over a seven year period.
- Abandoned mine land allocation formula modified to direct more funds to areas with most historic coal-related problems.
- Abandoned mine land funds distributed annually outside of congressional appropriation process.
- Lien Provisions streamlined.
- Redefines priorities for abandoned mine land funding.

These changes result in dramatic and far-reaching effects to the Abandoned mine land program. The states, tribes and federal Office of Surface Mining worked cooperatively to ensure a smooth implementation of the 2006 amendments of the nation's coalfields in a way that benefits citizens.

AML Reclamation Accomplishments (July 1, 2007 - June 30, 2009)			
Final Designs Completed			
Project Name	County	Acres	AML Problems*
Mindenmines Emergency	Barton	0.01	Drilling/Grouting 1 home
Aurora Shafts	Lawrence	5	5 VO's
Billy Creek/Blacksmith	Adair	7	DPE, PWAI, IRW, HEF
West Montrose	Henry	61	DH, DPE, HWB, PWAI, IRW
England Air Shaft	Newton	1	1 VO
Edwards Shafts	Lafayette	1	2 Portals
Stroup Shaft	Jasper	1	1 VO
West Fountain Shafts	Jasper	1	6 VO's
Vogt Shaft	Jefferson	1	1 VO
DeSoto/Mapaville Shafts	Jefferson	2	16 VO's
Total Acres		80.01	
Construction Contract Awards.			
Project Name	County	Acres	AML Problems*
Mindenmines Emergency	Barton	0.01	Drilling/Grouting 1 home
Aurora Shafts	Lawrence	5	5 VO's
Billy Creek/Blacksmith	Adair	7	DPE, PWAI, IRW, HEF
West Montrose	Henry	61	DH, DPE, HWB, PWAI, IRW
England Air Shaft	Newton	1	1 VO
Edwards Shafts	Lafayette	1	2 Portals
Stroup Shaft	Jasper	1	1 VO
West Fountain Shafts	Jasper	1	6 VO's
Vogt Shaft	Jefferson	1	1 VO
Total Acres		78.01	
Construction Contract Completions			
Project Name	County	Acres	AML Problems*
Rocky Fork	Boone	41	DPE, CS, PWAI, GO, SL, SA
Rangeline Pb/Zn Shaft	Jasper	1	1 VO
Mindenmines Emergency	Barton	0.01	Drilling/Grouting 1 home
Aurora Shafts	Lawrence	5	5 VO's
Billy Creek/Blacksmith	Adair	7	DPE, PWAI, IRW, HEF
England Air Shaft	Newton	1	1 VO
Edwards Shafts	Lafayette	1	2 Portals
Stroup Shaft	Jasper	1	1 VO
West Fountain Shafts	Jasper	1	6 VO's
Vogt Shaft	Jefferson	1	1 VO
Total Acres		59.01	

Inventory and Ranking

Public Law 95-87 requires the highest priority abandoned coal mine sites be reclaimed before problems created by mining other commodities are addressed. The order in which abandoned mine land is reclaimed is initially determined by classifying the problem sites into three broad priority categories. Priority I and II problem sites are reclaimed first since they pose a threat to the public health and safety. Priority III problem sites that adversely affect the environment may be addressed simultaneously if they are located adjacent or are contiguous to priority I and II problems. Otherwise stand alone priority III features may not be reclaimed until all priority I and II sites have been reclaimed. P.L. 95-87 also provides that, at the request of the governor of the state or head of the tribal body, certain priority I non-coal reclamation projects may be undertaken on a case-by-case basis before the priorities related to past coal mining have been fulfilled. The Land Reclamation Program has been closing extremely dangerous non-coal mine shafts under this provision since 2001. The information pertaining to Missouri's abandoned mine lands is contained in the in a way that benefits citizens Inventory. This database currently contains 258 in a way that benefits citizens problem sites. It is continually updated as existing site conditions change or new sites are identified.

On an annual basis, the unfunded high priority (Priority I and II) problem sites are ranked and selected for future reclamation work according to the severity of existing problems. To date, an estimated \$91 million in priority I and II abandoned mine land problems have been inventoried in Missouri. Of this total, \$43 million remains unfunded.

Missouri's Abandoned Coal Mine Land Emergency Program

The Land Reclamation Program is responsible for investigating all emergency complaints in Missouri and conducting reclamation work when emergencies are declared. An abandoned mine land emergency is a sudden event related to past coal mining that has a high probability of causing substantial harm. There must also be a need to abate the emergency situation more quickly than would be possible under normal abandoned mine land program operations. Sometimes an emergency complaint constitutes an eligible coal mine problem, but the situation does not meet the emergency criteria. In this case, reclamation work could still

be undertaken by the Land Reclamation Program under the normal abandoned mine land program. The proposed reclamation project, however, would be subject to the project ranking and selection process and would have to compete for available grant funds along with other priority I and II problem sites.

During fiscal year 2008 and 2009, the Land Reclamation Program conducted five emergency investigations. Three of these emergency complaints involved foundation settlement problems at private residences located in areas of past underground mining. The Land Reclamation Program conducted on-site investigations and ruled out coal mine subsidence as a possible cause for all but one of the complaints. In that instance, the Land Reclamation Program conducted exploratory drilling to determine if mine voids were present. The drilling results revealed that foundation settlement problem was related to coal mine subsidence and emergency funding was requested from the Office of Surface Mining to address the problem.

Feature Projects

West Montrose

West Montrose reclamation project is located in Henry County, one mile northwest of Montrose. On June 26, 2009, notice to proceed with construction was awarded to Hale Bobcat and Fencing, LLC from Henley. Reclamation activities include backfilling an approximate 1,100 feet long dangerous highwall located along County Road SW700. Additional reclamation includes the elimination of several small pools of acidic water, grading dangerous piles and embankments and the excavation and hauling of a residential waste dump to a permitted sanitary landfill. The landowner reported that cattle using the acid impoundments had a lower than average rate of gain with their calves. After the area has been stabilized with the final seeding, acid runoff should be substantially reduced and the quality of the remaining pit water should be greatly improved. The total project acreage is approximately 60 acres. Prior to reclamation, the vegetation consisted of scrub trees and brush, honey suckle and a thick stand of seresia lespedeza. Following reclamation, the site will be revegetated with cool-season grasses and legumes. In order to increase the organic matter, the site will be planted with successive green cover crops such as pearl millet, oats, common lespedeza, and winter rye for several seasons prior to final seeding.

Billy Creek/Blacksmith

The Billy Creek/Blacksmith abandoned mine land reclamation project was completed on Nov. 4, 2008 at a cost of \$306,102.33. The Billy Creek/Blacksmith Project entailed the reclamation of two small coal waste dumps associated with abandoned underground mines, located approximately 6 miles west of the city of Kirksville. The coal waste dumps were graded to eliminate dangerous piles and embankments, mitigate acid mine drainage that could impact local streams, remove industrial/residential waste and address several hazardous equipment and facility features. Approximately 9 acres of barren and eroding coal waste were graded, treated with lime, and covered with glacial till borrow material and re-vegetated to control erosion.

In coordination with the Arbor Day celebration on April 21, 2009, twenty seven 4-H students from the local high school at Novinger volunteered their services in the planting of 200 trees of various oak, ash, hickory, cedar, persimmon and hackberry species at the Billy Creek site. The trees were provided by Forrest Keeling Nursery of Elsberry, at a cost of \$2,018.30.



Billy Creek -
before and after.



Novinger High School 4-H students planting trees at the Billy Creek site.

Coleman Residence Emergency Subsidence Project

The Coleman emergency subsidence occurred at 1005 Smithers, Mindenmines, in Barton County. The Coleman subsidence was located approximately 15 feet from the residences home. Freddy Vans from Pittsburg, Kansas who holds the contract for emergency drilling and grouting was contacted to perform the work. Construction activities were initiated on Sept. 25, 2007 and were completed on Dec. 19, 2007. Subsidence activities included drilling 11 bore holes for a total of 564 feet. Five of the bore holes were filled with a grout mixture of cement, fly ash, sand and water, along with one 4-inch diameter air shaft, which was cased and was reported to have



Coleman Subsidence

been used as a septic system prior to the city's installation of a municipal sewer system. The other six holes either never encountered voids or collapsed. The total amount of grout material used stabilize the subsidence feature was 260 cubic yards. Total cost for the Coleman emergency subsidence was \$44,018.

Harrisburg/Thornhill Reclamation Project

On April 3, 2008, the program entered into a contract with Greddell Engineering to design the Harrisburg /Thornhill Reclamation Project. With the additional funding spawned by the 2006 amendments the Surface Mining Control and Reclamation Act, it is imperative for the program to solicit consultants and assure on the ground reclamation activities are designed and constructed to meet our goals. This project is located near Harrisburg in both Boone and Howard counties. The project area has been divided into four separate areas with eight different landowners. The four sites encompass approximately 76 acres of abandoned mine lands. Reclamation activities will include grading dangerous piles and embankments, addressing acid mine drainage issues, backfilling an acidic pit, burying exposed coal waste and cleaning up and hauling industrial/residential waste to a permitted sanitary landfill.

Acid mine drainage is affecting the water quality in three unnamed tributaries to Perche Creek in Boone County and one unnamed tributary to Moniteau Creek in Howard County. Mine spoils and dangerous piles and embankments will be graded, limed, fertilized, seeded and mulched to control sediment and acidic mine waste runoff, which has been detrimental to the streams, lakes and pits in the areas. A 2-acre lake will be constructed to buffer and dilute the effects of acid mine drainage at one of the sites and a 1/4 acre spawning pond will be created to enhance an existing pit at another site. Both of these impoundments are designed to provide additional benefits such as improved fish habitat and recreational activities. All of the sites will be directly re-vegetated with the exception of the Howard County site, which will use a two acre borrow area to cover graded coal waste with two feet of cover. Twenty-six acres will be seeded to a warm season grass consisting of Big and Little bluestem, side oats grama, indian grass, alfalfa, perennial ryegrass, Illinois bundleflower and a mixture of forbs. The remaining 50 acres will be reseeded with a cool season grass/legume mixture comprised of orchard grass, timothy, smooth brome, common lespedeza, red clover and alfalfa.

Bee Hollow Design

The abandoned mine land staff initiated the design of the Bee Hollow abandoned mine land reclamation project, located on and adjacent to the Bee Hollow Conservation Area in Macon County. There are two landowners involved in this project, the Missouri Department of Conservation and a private land owner on the north side of Jackpot Road. The Bee Hollow reclamation project is



Harrisburg/Thornhill project - before reclamation.



located along Jackpot Road in southern Macon County approximately one and a half miles west of Hwy. 63 and seven miles south of Macon. This project will reclaim approximately eight acres of abandoned mine land surface mine lands while eliminating an approximate 1.5-acre sandstone embankment, covering barren coal waste with spoil material and protecting approximately 800 feet of dangerous highwall with installation of a guardrail. After final grading, approximately 10 acres of reclaimed area will be re-vegetated with a mixture of warm-season grasses and forbs, or cool-season grasses and legumes that are beneficial to wildlife. Construction activities shall commence in early spring 2010 and construction should be complete by mid-summer 2010.

Abandoned Mine Land Non-Coal Reclamation Projects

Although the Land Reclamation Program uses federal money designated to reclaim abandoned coal mines, the money may also be used to reclaim non-coal vertical mineshaft openings if they meet certain criteria. These non-coal problems are allowed to be corrected with a request from the governor if it is necessary for the protection of the public health,

safety, and general welfare from extreme danger, thereby meeting priority I problem criteria.

Between July 1, 2007 and June 30, 2009, fifteen dangerous non-coal shafts were closed in the Joplin, area. The Aurora Shafts reclamation project closed 5 dangerous vertical mine shafts, three of which were located in the Aurora city park. These mine openings were dewatered, excavated, and sealed with 4-foot thick concrete plugs. Additionally, the West Fountain Shafts Reclamation Project closed six dangerous vertical mine shafts on private property located northwest of Joplin in Jasper County. All of these mine openings were excavated to expose bedrock and a 4-foot thick concrete plug was constructed over each shaft. The remaining four shafts were reclaimed and sealed as individual projects, as they were reported as sudden occurrences that needed to be addressed immediately.

Occasionally a dangerous mineshaft may be closed by backfilling with rock or soil material. This closure method is quick and relatively inexpensive but is often not the best choice. Most of the time a more costly, yet more permanent closure method is preferred. This more common type of typical

Bee Hollow -
before reclamation.

non-coal shaft closure consists of excavating the loose soil material around the hole down to the bedrock, placing a 4-foot thick layer of polyurethane foam in the shaft, placing a wedge-shaped steel-reinforced concrete plug into the top of the shaft and backfilling over the concrete with waste material adjacent to the hole or with any available soil material. A closure of this type ranges typically ranges from around \$10,000 to \$15,000 per shaft but can vary based upon the specific conditions of each shaft.

The next dangerous non-coal mineshaft closure projects that are in the process of being designed include 15 shafts near DeSoto in Jefferson County. Although this next project in eastern Missouri will address all of the open mine shafts we currently know about, it is suspected that there are many more open shafts we are unaware of will need to be closed. Dangerous mine shafts will continue to open up (especially in the tri-state lead/zinc mining district in the Joplin area) and will be investigated and closed to protect the public.



Typical Non-Coal Shaft



West Fountain Shaft

Industrial Minerals

Permitting

Industrial mineral mining permit certificates are issued for a one-year period. The industrial mineral permits must be continually renewed until the Land Reclamation Commission or staff director deems all mined land covered by the permit is fully reclaimed. Approximately 700 new or renewed permits were issued in the past two years. Since some permits contain multiple sites, the number of permitted sites is substantially higher. In addition to the new and renewed permits, staff spent a considerable amount of time reviewing other permit actions, including permit transfers, expansions, amendments and consultations with the Missouri Department of Conservation. Fees collected from industrial mineral permits are used to conduct necessary regulatory functions.

Inspections

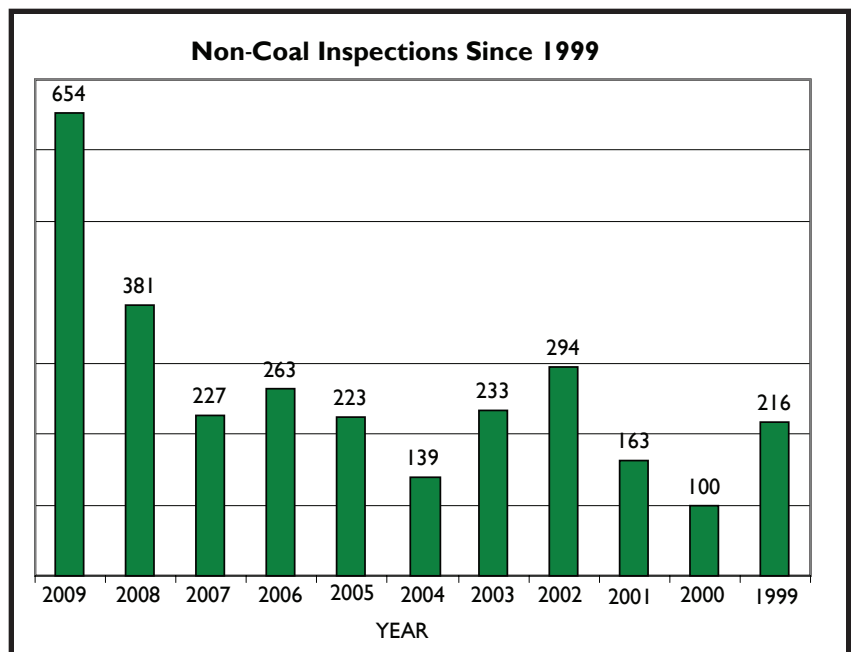
Before 2007, the state was historically separated into at least four geographic area inspection units. Now, the state is divided into two geographic area inspection units with at least two inspectors assigned to each unit. Each unit contains about 57 counties. Not all counties have an industrial mineral mine site. When staff wanted the state divided into two regions, it was noted that some areas become more active at times when compared to others. Before the change, one staff member had to investigate a lot of complaints in the southwest portion of the state while inspection staff assigned to the northeast portion of the state had a relatively normal schedule. Now, at least two inspection staff members share an assigned area to help maintain a relatively even workload.

Operators in the business for more than five years have seen changes in inspection staff. Many operators prefer the same inspector each year for the purpose of consistency. The program will accommodate their request as often as possible.

Inspectors are limited to the amount of on-site inspections they can perform in a given year, as they conduct permitting and other actions as well. Mine operations range in size from one acre gravel bars to some sites being greater than 300 acres such as limestone quarries. In 2008, there were 804 permitted industrial mineral sites, with 381 inspections conducted and an astounding 654 inspections were conducted in 2009. These total numbers are an increase from the number of inspections conducted over the past few years. This increase in inspection numbers are related to:

- Longer employee retention time.
- Increased efficiency for producing inspection reports.
- Fewer turnovers in inspection staff.

The Industrial Mineral Unit projects to have a total of 425 inspections in 2010 due to a full inspection staff and certified inspectors to conduct investigations. Each of the five inspectors will need to conduct 85 inspections. The non-coal staff conducting inspections





Regular Inspection: S & S Quarries Inc - April 2009.

at this rate will be able to accomplish inspecting a site once every two years. This is a huge improvement when compared to the last 10 years.

Types of Inspections

In 2008 and 2009 there was an average of 517 site inspections conducted. Inspections typically fit into three categories.

Regular Inspections

Regular open pit inspections are conducted to determine if an operator is in compliance with the approved permit and the applicable performance requirements. Performance requirements checked by inspectors include timeliness of reclamation, safety barriers, lateral support, erosion and siltation control, grading, topsoil handling and revegetation. Inspectors also evaluate each mine site to ensure all mining disturbance is confined to the permitted and bonded area and the approved post-mining land uses are being established.

In-stream sand and gravel inspections now involve performance standards. Inspectors evaluate the mined area on the gravel bar to make sure

the material being excavated is unconsolidated. Inspectors also make sure there is no mining below the waterline, no relocation of stream channels, no sorting or washing of gravel on the gravel bar and an undisturbed buffer of 10-feet from the flowing water.

Complaint Inspections

Complaint inspections are conducted after the program receives notification an industrial mineral operation may be in violation of the Land Reclamation Act. Complaints filed may involve blasting, noise, truck traffic, water pollution, digging in flowing water, erosion or siltation. Following an investigation, the inspector and operator are often successful in resolving a citizen's complaint in a timely manner. However, many complaints related to mining operations, such as blasting and noise, are not regulated by the Land Reclamation Program and are referred to the appropriate regulatory authority.

The department requires a complaint be investigated within 30 days. The goal is to respond within 14 days of receiving them. However, an investigation is usually conducted within seven work days. There were 27 complaints in 2008 and 43 in 2009.

Bond Release and Other Inspections

Bond release inspections are conducted at the operator's request when reclamation has been completed. The mining company will also send the landowner a letter announcing the intent to seek a release of the land. The landowner may request a hearing if they feel the land is not properly reclaimed.

The focus of the bond release inspection is to determine if the mine site has been reclaimed in accordance with the reclamation plan. The inspector



Complaint Inspection: Ozark stream gravel pushed against bank and channelization.

must evaluate if the operator has established the designated post mining land uses. Post mining land uses may be designated as wildlife habitat, agricultural, development or water impoundment. The staff director is allowed to determine if the bond, or any portion thereof, should be released. When mined land is properly reclaimed a recommendation for bond release is made to the Land Reclamation Commission or staff director. If either the Land Reclamation Commission or staff director approves the request for approval of reclaimed land, the reclamation performance bond is released back to the operator. The commission or staff director approved the release of 949 acres of reclaimed mine land in 2008 and 481 acres in 2009.

The department and programs are also conducting Environmental Assistance Visits for new operators. Typically, the department allows an operator to conduct operations for a few months before conducting an initial inspection. Inspectors will typically let a new operator conduct operations for a two-month period and then see what changes the operator may need to make to stay in compliance with applicable mining laws. Assistance visits are another type of inspection. If an operator requests an inspection to see how to conform to the mining laws, then an inspector will provide that type of assistance inspection. The latest assistance inspection involved a company that wanted to know what type of activities could be conducted in a pre-law area, sinkhole field and did not want to move topsoil twice. Inspection staff was charged in March 2007 to inspect every site in either an outstanding state or national resource watershed. Inspection staff completes the requirement to visit each mine site within an outstanding state or national resource watershed on an annual basis.

Legislative and Rule Changes

The Land Reclamation Act and the regulations governing tar sands and barite mining remained essentially unchanged during the evolution of the coal mining standards. In 1990, the passage of House Bill 1584 amended the Land Reclamation Act to encompass all non-coal surface mining activity. This includes limestone, sand, gravel, clay, tar sands and barite mining. Sandstone, granite and trap rock quarries also became subject to the 1990 mining regulations.

The revisions require a much more thorough description of the method of operation and reclamation. The public was also included in the permitting process for the first time, through a



Bond release inspection at Harbison Walker Zimmermann pit August 2008



Martin Construction ,
Courtois Creek Gravel Bar -
February 2009

public notice and comment procedure. In addition, the right of anyone affected by noncompliance at an operation could request a hearing before the Land Reclamation Commission.

Time frames requiring operators to complete reclamation in a timely manner were established. Bonding fees were increased to help ensure the state could complete reclamation if a permit is revoked. Grading to a traversable topography, as well as replacing 12-inches of topsoil is also a requirement. Following these amendments, rules and regulations became effective Feb. 6, 1992.

Fees

Changes to the 2007 edition of the Land Reclamation Act became effective on Aug. 28, 2007. It included a fee increase for operations that mine more than 5,000 tons of sand and gravel per year or any other commodity. The fee is based on an annual permit, bonded acreage and site fee calculation. The rate increase includes an \$800 permit fee, a \$200/\$400 site fee depending if the site is mined more than six months and a \$10 acreage fee for each bonded acre. A total permit fee will not exceed \$3,000.

The fee of \$300 for operators that mine less than 5,000 tons of sand and gravel per year has not change since 2002. Fees became effective on Aug. 28, 2007 and remain in effect until Dec. 31, 2013.

There is also a new geologic resources fee that will be administered by the department's Division of Geology and Land Survey. This fee includes a \$50 permit fee, a \$50 site fee and a \$6 acreage fee for each bonded acre. The department will use this new geologic resources fee to provide assistance to the industrial minerals industry in identifying the quantity and quality of natural resources. The department will work closely with the newly created Industrial Minerals Advisory Council to establish initiatives and goals for the program.

Gravel bar at River Rock
Redi-mix June 2008



No changes were made to the Land Reclamation Act in 2008 or in 2009. However legislative bills were introduced with respect to changing public notification requirements and removing the option for an operator to respectfully decline a public meeting. Similar bills will be introduced during the 2010 and 2011 legislative sessions including extending the sunset date for the industrial mineral fees.

Missouri Blasting Safety Act

Although the department's Land Reclamation Program does not have any authority concerning blasting related activity, detonations of explosives at quarries is one of the top complaints received by the program. Because of this, the Missouri Legislature introduced the Missouri Blasting Safety Act (House Bill 298).

The governor signed the Missouri Blasting Safety Act on July 13, 2007. The State Fire Marshall's office implements this act. The Blasting Safety Act requires individuals using explosives to have or be supervised by a person with a blaster's license, with some exceptions. The act directs the Division of Fire Safety to create a blaster's licensing program.

The act lays out qualifications for license applicants, which include completing an approved blaster's training course and passing a licensing examination. Licenses are valid for three years and may be renewed upon the applicant meeting renewal requirements as specified in the act. Blaster's licenses shall be required within 180 days of the division publishing licensing rules.

Contact the Division of Fire Safety at 573-751-2930 to learn more about these requirements.

Mining versus Development

Amendments made in 2005 to the Land Reclamation Act provides further clarification about land development. Land development sites sometimes have excess material due to excavation activities. In some cases, industrial minerals make up the majority of excavated material. The Land Reclamation Act provides permit exemptions for construction excavations to protect land development sites from being labeled as a mine site. These constructions sites must have engineering plans and specifications prepared by an architect, professional engineer or landscape architect. Excavation for construction performed under a written contract that requires excavation of minerals or fill dirt shall be considered construction and exempt from Land Reclamation permitting requirements.



Mining below
the waterline.

Public Participation

When applying for a new site, transferring an existing site or applying for an expansion, an operator is required to send a notice of intent to operate a surface mine. The operator is required to send the notice by certified mail to all landowners considered adjacent or contiguous, and to the governing body of the counties or cities where the proposed mine area is located. The operator is also required to publish a public notice of intent in a newspaper that is qualified to run public notices and is located in the county where the proposed mine is located. The public notice must be printed once a week for four consecutive weeks. The public notice requirement also allows the public an opportunity to provide comments or request a public meeting. The public comment period lasts for 45 days. Operators have the right to respectfully decline a public meeting if they desire. Operators are also holding their own version of a public meeting or “open house” neighborhood gatherings to discuss mine plans when proposing a new site with great success.

Since Aug. 28, 2001, there have been 19 public meetings based on the 2001 edition of the Land Reclamation Act. Attendance figures at the public meeting ranged from a group of five to a crowd of nearly 80 people. Nine of the public meetings resolved the concerns expressed by the public and

did not go as a request for a hearing before the Land Reclamation Commission. Public meetings provide a forum for the public to better understand or resolve issues related to a proposed mine site. They also provide a starting point for a company to reveal the proposed mine plan and provide responses to the public’s concerns. Some of the topics covered at the public meetings involve impacts to air quality, water quality, permitting issues, blasting related issues and livelihood issues. The communication at the meetings allows everyone the opportunity to share and understand the potential impacts a proposed surface mine may present.

Following a public meeting, the Land Reclamation Act at Section 444.773.3, RSMo, requires the staff director to make a formal recommendation regarding the issuance or denial of an applicant’s permit.

The director’s recommendation is based on several specific items:

- The applicant’s compliance with submitting a complete application.
- The applicant’s compliance with fulfilling the requirements of a complete application.
- Consideration of any written comments received.

- Whether the operator has had a permit revoked or a bond forfeited.
- If a petition is filed and a hearing is held, the commission shall make the decision.

The industrial minerals permitting program continues to look for ways to improve its methods of helping the public to understand the industrial minerals permitting procedures. Each year, citizens living near proposed mines request six to 10 public hearings on average, about the issuance of permits.

The Land Reclamation Commission granted four hearings since the 2001 edition of the Land Reclamation Act. Requests for hearings require a tremendous amount of staff time to address and will become increasingly common as mining companies look to open sites near heavily populated areas. In two cases, the operator was issued a certificate to operate a surface mine. One of the cases involved the operator withdrawing their application. On Sept. 27, 2007, the commission granted a hearing for a Lake Ozark quarry application. New sites and expansions to existing sites are needed to provide building commodities to meet the needs and demands of on-going and new construction.

Routinely, the concerns brought to the commission involve issues outside the regulatory authority provided in the Land Reclamation Act. These issues include concerns about blasting, safety on public roads and the mine's effect on property values. Even so, the commission has encouraged all citizens who have requested hearings under the proper circumstances to personally appear at regularly scheduled commission meetings. The request for a public hearing process has brought an acute

awareness to the commission about what is most troubling to the citizens. In return, the public has an opportunity to learn more about the reclamation requirements under the Land Reclamation Act. Continued contact will help pave the way for the citizens to resolve their concerns about mining.

Enforcement

Enforcement powers of the Land Reclamation Commission were enhanced in two significant ways by revisions made in 1990 to the Land Reclamation Act. The commission may impose administrative penalties when notices of violation are issued and they have the option to refer civil actions to the Cole County Court rather than in the county where the violation occurred. These revisions have resulted in more prompt and vigorous action by the operators to eliminate violations. Often, violations observed during an inspection are eliminated through the use of conference, conciliation and persuasion. This process encourages the operator to correct a noncompliance through voluntary action and is used normally in cases of relatively minor noncompliance. If attempts to correct a violation through conference, conciliation and persuasion are not successful, a notice of violation is issued to the operator.

Nine notices of violation were issued during 2008 and 2009. Five were administrative in nature, one violation involved performance standard requirements and three of the issued violations were formal complaints. Administrative violations often involve mining without a valid permit and mainly failure to renew a permit. The performance standard violation involved mining below the waterline. An increase in the number of site inspections at industrial minerals operations typically carries the potential for an increase in enforcement activity during a specific time frame. Since the Land Reclamation Program started conducting environmental assistance visits, the department has noticed mining operators are now more informed about the rules and regulations and are less likely to be in a noncompliance situation. Potential enforcement actions are avoided or minimized through close coordination with the department's Land Reclamation Program staff.

Bond Releases

Bond and reclamation liability release is an important part of the mine closure process. An operator initiates the process by completing a *Request for Approval of Reclaimed Land* and submitting this document along with a map that clearly shows

Alsey Refractories, Pillard Site -
July 28, 2008 bond release.



the proposed release area. The operator must also mail a completed copy of the *Request for Approval of Reclaimed Land* form and map with a cover letter to the landowner of the requested release area.

Land Reclamation Program staff must inspect conditions at the site and make a recommendation to the staff director or Land Reclamation Commission, which will rule on the bond release request. At least two growing seasons must pass after an area has been planted before the success of revegetation can be judged. Land never affected by mining, but is under permit and bond, may be released as unaffected.

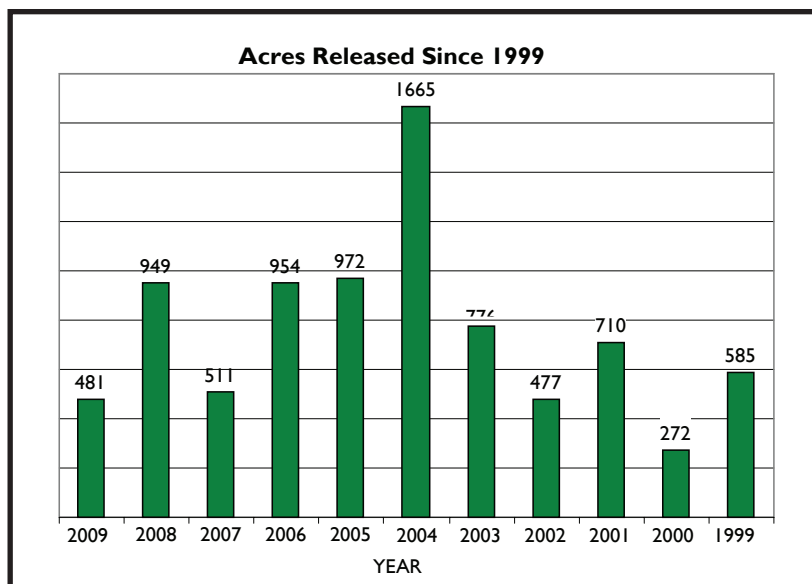
To obtain a Request for Approval of Reclaimed Land form, call the department's Land Reclamation Program at 573-751-4041. The form is also available on the Web at www.dnr.mo.gov/forms/index.html#LandReclamation.

Bonding

Open-pit sand and gravel operations mining 5,000 tons per year or less must be bonded at a rate of \$500 per acre before a permit is issued. For all other operations, the minimum bond required on 8-acres or less is \$8,000; every acre over 8-acres requires bond at \$500 per acre. The rules allow for a \$4,500 per acre topsoil bond when there is a failure to salvage topsoil for those acres. Typically, in-stream sites are not subject to bonding requirements due to the lack of reclamation responsibility. However, upon inspection if an in-stream site is determined to have created a reclamation responsibility, bonding requirements of \$500 per acre will be imposed.

The state will use the bond to complete reclamation if the permittee, for whatever reason, is unable or unwilling to fulfill the legal obligation to reclaim the disturbance to the land surface they caused. An operator may secure bond through a surety bond, certificate of deposit, or an irrevocable letter of credit. All bonds must be submitted on forms provided by the Land Reclamation Program.

If an operator elects to use a certificate of deposit to secure bond, the certificate of deposit must be accompanied by a "Personal Bond Secured by a certificate of deposit". The certificate of deposit must also be assigned to the State of Missouri and the issuing bank must acknowledge this action using the assignment of certificate of deposit. The assignment must be irrevocable and conditioned on the release of the bond by the Land Reclamation Commission. A certificate not assigned to the State must be made payable solely to the State of



Missouri. In either case, the interest earned on a certificate of deposit must be made payable to the depositor.

Applicants who wish to increase the number of acres under permit must post additional bond. A surety bond may be increased through a rider with an attached power of attorney. Bonds may be replaced, dollar for dollar, at any time. The old bond cannot be returned until the replacement bond has been submitted and accepted by the Land Reclamation Program staff director. At the end of FY2009 there is record of:

\$11,181,260.00	Surety bonds
\$ 3,051,650.11	CD's
<u>\$ 5,357,654.96</u>	LOC'S
\$19,590,565.07	Total amount in Bond

Bond Forfeiture

The Land Reclamation Act went into effect Jan. 1, 1972, and permitted and regulated the mining of limestone, clay, barite, tar sands along with sand and gravel in Missouri. As part of regulation, the companies and individuals participating were obligated to put up a reclamation performance bond in the amount of \$500 per acre for every permitted acre. If an individual or company fails to perform the required reclamation, the bonds would then be forfeited and the state would complete the reclamation.

The bonding amount was subsequently found to be inadequate to cover reclamation costs as well as other inadequacies in the act. Therefore, the act was amended effective Aug. 28, 1990. The amendment added granite, trap rock, sandstone,



Travis Sand and Gravel
Bond forfeiture site.

oil shale and shale to those already regulated and increased the reclamation bonding to a minimum bond of \$8,000 for the first 8-acres and \$500 for every acre permitted thereafter. Between 1972 and 1990, twenty-six sites operated by 14 different companies became bond forfeiture sites and proper reclamation became responsibility of the department's Land Reclamation Program.

In 2003, National Refractories left reclamation responsibilities to the State when they went bankrupt. Due to negotiations with the surety company, a settlement was not reached until October 2006. The surety provided \$85,250 in bond monies to reclaim 25 clay pits for a total of 162.5 acres. After an initial inspection, the department's Land Reclamation Program quickly learned there was not enough bond to properly reclaim the sites in accordance with The Land Reclamation Act. Two sites in particular have a cost estimate of \$200,000 for proper reclamation. The program continues to work with landowners to reclaim these sites. No mining companies have left a reclamation responsibility to the State in 2006 or 2007.

In 2008 and 2009 there was a total of 93-acres forfeited involving two limestone and two sand and gravel mining operations.

The non-coal unit did inventory all 15 of the bond forfeiture sites, not including the clay sites once operated by National Refractories in 2008 and 2009. Inventory results indicate the remaining sites range from needing further reclamation efforts to being ready for release. The next *Biennial Report* should indicate a reduced amount of liability for the remaining Non-Coal bond forfeiture sites.

Sand and Gravel Rules

On Sept. 15, 2001 the Land Reclamation Commission published proposed rules in the *Missouri Register*, which were intended to mirror the Water Protection Program's gravel removal guidelines. During the period that followed, the Land Reclamation Program received many comments concerning these proposed rules. The commission decided to hold four public meetings around the state in an effort to publicize the reason for the rules and explain the department's interpretation of them. These meetings were held in December 2001, followed by a public hearing on Jan. 24, 2002. After deliberation, the commission decided to form a workgroup to review and possibly revise the proposed rules. The workgroup included members from industry, landowners, anglers, hydrologists, environmental groups, government agencies and others with an interest

in streams and gravel mining. The workgroup was mandated to come up with suggestions for rules that would be acceptable to all interested parties. The rules for in-stream sand and gravel mining operations became effective in May 2005.

In-Stream Sand and Gravel Mining

In-stream sand and gravel mining is one of the most prevalent types of mining in Missouri, as far as the number of sites. This type of mining isn't just seeing a piece of excavating machinery in the flowing portion of the stream, it is more of a bar skimming mining operation.

Bar skimming is limited to the exposed portion of the gravel bar above the water line, between the ordinary high banks of a stream. Bar skimming is recommended as a means for advancing stream resource conservation while maintaining a viable extraction industry. This type of gravel removal operation lowers the risk of forward erosion of the stream channel upstream and sedimentation downstream. In addition, the practice of removing gravel at periods of low water flow will aid in protecting wildlife near the stream environment. Some of the new rules include, staying an adequate distance from the stream bank, use of existing crossing areas, leaving an undisturbed buffer of 10-feet from the flowing water line and no mining below the water line unless the operator has applied for and received a variance.

In fiscal year 2009, there were 281 permitted in-stream sites. Numerous operators across the state excavate sand and gravel deposits, commonly known as gravel bars, as a source of aggregate material.

During the 1990s this activity underwent several changes in regulatory control within Missouri. In the early 1990s, the department's Land Reclamation Program was the permitting and enforcement authority that both issued permits for this type of mining activity and also oversaw the proper removal of sand and gravel from Missouri's streams. In the mid 1990s, the regulation of this activity was taken up by the Army Corps of Engineers who took over the entire process of permitting and inspecting these mining facilities. The Army Corps of Engineers lost their jurisdiction over this activity in late 1998 due to a ruling by the U.S. District Court of Appeals. The court found that "de-minimus" or incidental fall back of sand and gravel into the stream from which it was being

excavated did not constitute the placement of fill by the mining operation. Hence, the court ruled the Army Corps of Engineers had exceeded its authority in requiring a permit for this activity.

In January 1999, the Land Reclamation Program resumed the former position of the regulatory authority over this type of mining activity and bases this authority upon the provision of the state's Land Reclamation Act. Approximately 150 permits were re-issued to the mining industry during the early months of 1999 by the Land Reclamation Program to take the place of the existing Army Corps of Engineer's permits. This Land Reclamation Program continues to be the regulatory authority to this day.

Spotlight on the Ozarks:

Sand and Gravel Mining

Sand and gravel mining operators in the Ozarks face challenges that operators in other regions of Missouri do not experience. The greatest regulatory challenge for sand and gravel operators is conducting mining and processing operations within the watershed of an Outstanding National or State Resource Waters. Outstanding resource waters are defined by the Missouri Department of Natural Resources' Water Protection Program as state or national waters:

- Outstanding state resource waters are high quality waters with a significant aesthetic, recreational or scientific value, specifically designated as such by the Clean Water Commission.
- Outstanding national resource waters are waters that have outstanding national recreational and ecological significance. These waters shall receive special protection against any degradation in quality. Congressionally designated rivers, including those in the Ozark national scenic river ways and the wild and scenic rivers system, are so designated.

The Ozark counties of Phelps, Crawford, Dent, Shannon, Reynolds, Texas, Carter, Douglas and Howell contain a majority of the either state or national outstanding resource waters. There are some smaller designated areas present in a few other counties scattered about the state. In-stream sand and gravel operations are prohibited from those waters listed as outstanding national resource waters. Clean water laws require mining operations within national outstanding resource watersheds to have a no discharge system. Discharges at sites



Jim Mills - August 2008.

in outstanding state resource watersheds shall not cause the current water quality in the streams to be lowered. Because of this regulation, the department's Land Reclamation Program issues a letter of six extra conditions along with a certificate to operate a surface mine to operators in these watersheds. Five of the conditions are applicable to all other operators as part of their standard sand and gravel excavation plan. The one condition that is not required of all other operators is the mined gravel bar is left nearly level at the end of the day. This is accomplished by back dragging any ledge or ridge created by the excavation. Most operators do this already and it does not present a financial burden to their operation. The mine site is not the only portion of the operation subject to the Water Protection Program's no-discharge requirements.

A no discharge system is also required for washing and other processing areas along with all other types of businesses that operate in an outstanding resource watershed. It is possible to operate a no-discharge sand and gravel wash plant. Spring Creek Materials currently operates mine sites and wash plants in compliance with the no discharge requirements. Owner Travis Morrison reports the only other alternative is to have sand and gravel shipped in from more than 150 miles away from the Missouri River. Shipping doubles the price of that material for every 35 miles of travel. In this case,

sand could cost up to \$85 per ton, not a viable option as it would be reflected in construction costs. Currently, there is an adequate supply of sand and gravel to meet growth demands in the outstanding resource watersheds of the Ozarks as this region is not experiencing the economic growth demands when compared to Branson, St. Louis or Kansas City.

Mining and economic development projects in the watersheds of outstanding resource waters are subject to either no discharge requirements or shall not cause the current water quality in the streams to be lowered. Operators in the Ozarks want universal and fair treatment for all mine operators in the state. Operators inform the department to keep in mind the impacts the water quality standards have on economic development as these decisions affect day to day operations. Ozark operators are managing their business on a thin line and believe extra conditions imposed on their operation are unfair circumstances. The University of Missouri's CARES website provides aerial photographs from 2007, allowing operators to locate isolated gravel bars. Inspectors also use this website to measure disturbed acreage at quarry operations. To view a site from the air, visit the website at www.cares.missouri.edu.

Metallic Minerals

Introduction and Purpose

The Metallic Minerals Waste Management Act, enacted into law in 1989, gives regulatory authority to the director of the Department of Natural Resources to have and exercise all powers provided in sections 444.352 – 444.380 of this act. The Metallic Minerals Waste Management Act regulates disposal of waste from metallic minerals mining, beneficiation and processing. Some of the director's duties are to secure appropriate staff, coordinate existing environmental programs, issue permits, make inspections, manage fees, maintain records of management practices, seek additional funds, publish rules and pursue appropriate enforcement actions. The minerals covered by the Metallic Minerals Waste Management Act are those minerals or ores containing lead, iron, zinc, copper, gold and silver. A Metallic Minerals Waste Management Permit was required no later than six months after Aug. 28, 1989 for any active metallic minerals waste management areas operating under a National Pollutant Discharge Elimination System permit, or dam safety registration, or both, or within 90 days after filing an application for an National Pollutant Discharge Elimination System construction permit or dam safety construction permit, whichever is applied for first. The operator applied to the director for a metallic minerals waste management area permit. Today, operator applications contain but are not limited to, a schedule and plan for closure and inspection-maintenance of the waste management area. Operators will implement the plan when the useful operating life of the waste management area is complete or when there is permanent cessation of the operation.

Permitting

In 1991, the Department of Natural Resources issued 11 permits to operators under the Metallic Minerals Waste Management Act. During 2001 and 2002, the program continued the five year review of the metallic minerals waste management permits. In 2002, the only underground iron ore producer, the Pea Ridge Iron Ore Company transferred their 180 acre permit area to an entity by the name of Upland Wings, Inc.

Metallic minerals waste management permit applications consist of financial assurance information and detailed waste management area closure and inspection-maintenance plans. The plans establish and explain the technical steps proposed to accomplish and maintain closure after mining and waste disposal is completed.

Issues addressed in the plans include:

1. The design and construction of waste control structures and tailings dams.
2. The characterization of waste products.
3. The methods for control and protection of surface water.
4. The methods for protection of ground water and aquifers.
5. The geology and seismicity of the area.
6. The potential of subsidence.
7. The reuse and off-site removal of wastes.
8. The surface reclamation of waste management areas.

The Doe Run Company
Buick Mine - July 2007.



Upland Wings iron ore mine site warm season grasses on iron ore waste - July 2007.



Herculaneum Smelter Slag Storage Area Out Slope - December 2007.

During the on-going permit application review, program is coordinating with the other Department of Natural Resources programs involved with the metallic minerals waste management areas. These agencies include the Air Pollution Control Program, Solid Waste Management Program and Hazardous Waste Program, the Water Protection and Soil Conservation Division's Water Pollution Control Program and Public Drinking Water Program, and the Geological Survey and Resource Assessment Division. The coordination process will allow the other programs to review and comment on the technical aspects of the plans so all the departments' issues may be incorporated into the permit.

The Doe Run Company's Buick Resource Recycling Division is currently working with the department's Hazardous Waste Program to develop a permit for a hazardous waste landfill on-site. If approved, the landfill site would encompass the current metallic mineral waste management area permitted by the Land Reclamation Program. Approval of the landfill permit would likely mean the metallic mineral waste management permit would be released as the Hazardous Waste Program's permit would be more restrictive and call for a much more significant clay cap over the old slag pile. This would mean much better environmental protection; due in part to the fact the site must meet post closure requirements for 30 years after closure date.

The Land Reclamation Program was involved with the department wide inspection and surveillance activities performed at The Doe Run Company's Herculaneum smelter. In May 2001, the department, the Environmental Protection Agency and The Doe Run Company signed a voluntary Administrative Order on Consent. The order requires the company to conduct certain response actions to abate an imminent and substantial endangerment to the public health, welfare and environment. The Land Reclamation Program has been monitoring the construction of a containment berm around the perimeter of the current slag pile, which was required in the order. Construction of the berm has been underway since spring 2007, and is scheduled to be completed by April 2009.

Inspection

Typically, inspections are performed semi-annually on the 11 metallic minerals waste management permit areas within Missouri. During the course of these inspections, all aspects of each company's permits are evaluated. The main focus of these inspections is to assess the company's compliance with virtually every environmental law is administered by the Missouri Department of Natural Resources. The Land Reclamation Program is entrusted as the coordinating agency within the department for each active metallic mineral producer currently operating in Missouri. It is the program's responsibility to act as the liaison for the other programs within the department and each metal producer to ensure continuing compliance with all applicable state environmental laws.

Actual on-the-ground reclamation does not begin at these sites until mineral production is stopped, and mine closure begins. Only one lead producer in Missouri is in active closure at the present time. Teck-Cominco American's Magmont Mine

ceased production in 1995 and began the actual reclamation of the surface effects after almost 30 years of lead mining and processing. During 2001 and 2002, three more facilities ceased production. The Pea Ridge Iron Ore Company's Pea Ridge mine ceased active mining operations and transferred its metallic minerals permit to a non-mining company named Upland Wings Inc. The Doe Run Company's Viburnum mine and Buick smelter also ceased production. The Doe Run Company's Glover smelter is in the process of receiving approval from the department for a partial closure of an old slag pile at its facility. The closure and inspection-maintenance plans for these mines and smelters are either being reviewed by the department at this time or the department is waiting for submittal of revised closure plans for review and approval.

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Enforcement

To date, four enforcement actions under the provisions of the Metallic Minerals Waste Management Act have been necessary by the program. Enforcement actions took place at two smelters and two mines. These actions included violations for construction of a waste management control structure prior to department approval, the failure of two facilities to contain metallic mineral wastes within their approved waste management areas and the failure of a now bankrupt facility for failure to submit annual permit fees.

Enforcement under this law is significantly different from enforcement under either the coal or industrial minerals units of the program. When it becomes necessary to issue a citation to any of the metal producers, the authority to do so rests solely with the director of the Department of Natural Resources. Enforcement is only authorized by law after attempts to eliminate the violation through conference, conciliation and persuasion have been exercised and exhausted.

Milton Bradley at
the Magmont Mine -
April 2009.



Information on the Internet

Missouri Department of Natural Resources

Department Home Page

Land Reclamation Program

The Complete Missouri Mining Law

www.dnr.mo.gov

www.dnr.mo.gov/env/lrp/index.html

www.moga.mo.gov/statutes/c444.htm

U.S. Department of Interior Office of Surface Mining

Office of Surface Mining, Washington DC

Office of Surface Mining -

Mid-Continent Regional Coordinating Center, Alton, IL

www.osmre.gov/osm.htm

www.mcrcc.osmre.gov

Other Mining and Reclamation Organizations

Other Mining and Reclamation Organizations National Association
of Abandoned Mine Land Programs

Interstate Mining Compact Commission

National Association of State Land Reclamationists

Limestone Producers Association

The Mining Industry Council of Missouri

www.naamlp.net

www.imcc.isa.us

www.crc.siu.edu/naslr.htm Missouri

www.molimestone.com

www.momic.com



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